Determining and fixing wavelength in air of light source - using control loop with many-valued characteristic with defined steps and evaluating thermodynamic parameters to eliminate ambiguity

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Abstract

The method involves using a stabilising control loop (1,3,301,305,130) with a many-valued characteristic with defined steps (FSR). To eliminate the ambiguity of the many-valued characteristic, a coarse value of the wavelength in air is determined from thermodynamic parameters of the ambient air and if required, of parts of the control loop.

A number of steps is determined from this coarse value by rounding and used to determine the exact wavelength in air.

USE/ADVANTAGE - For Fabry-Perot interferometric length measurement. Method is simplified and calibration and operating method added.